



LAUNCHING AN EMS

This guidance manual represents the first environmental management system (EMS) module developed by the Pollution Prevention Unit, Technical Support Section of the Waste Programs Division, Arizona Department of Environmental Quality. It is one of the four EMS modules developed by the department. The manual is intended for use as a voluntary guidance document for small to medium size facilities wanting to establish an EMS. Questions and comments on the EMS modules can be directed to 602-771-4205 or js3@azdeq.gov.

Disclaimer

While this manual is written to provide assistance to individuals preparing an EMS as part of the Pollution Prevention Plan amendment, it does not replace the Arizona Revised Statutes, Title 49, Chapter 5, Articles 4 and 5. Those who prepare documents read the appropriate regulations before using this guidance.

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EMS MODULE SERIES

Module One	-	Launching an EMS
Module Two	-	Developing an EMS
Module Three -		EMS Implementation
Module Four	-	EMS Feedback

HOW TO USE THIS GUIDANCE

The phrase “Launching an EMS” in this guidance refers to the three steps which are necessary to start an Environmental Management System (EMS).

The first step is to raise management awareness. This is the key in starting an EMS because the prerequisite to a successful EMS is management commitment. The commitment will come after management is well informed about the costs and benefits of implementing an EMS. This cost-benefit issue is outlined briefly in the introductory section of this guidance.

The second step is the appointment of an EMS Team by management. The appointment of an EMS Team reflects management’s support and commitment to provide resources. Section II of this guidance outlines essential sequential steps in order to form an EMS Team for your facility.

The third step is the signing of an Environmental Policy by management. The policy is important because it will serve as a guide for your facility’s EMS. Developing an Environmental Policy is addressed in Section III.

Once you have an EMS Team and Environmental Policy in your facility, you are ready to proceed to the next phase, i.e. to develop an EMS. Developing an EMS is the focus of Module Two of this EMS Module Series.

ADEQ is also providing a series of EMS workshops to complement the EMS Module Series. Onsite EMS assistance is also available upon request for Arizona facilities.

Please provide your feedback on this document. Questions and comments can be directed to js3@azdeq.gov or by phone to (602) 771-4205

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I. Introduction

This module will help you to launch a simple Environmental Management System (EMS). A voluntary EMS is a vehicle that can lead business to improved environmental performance. This EMS vehicle varies by size. While a simple EMS will produce a greener business outlook, a more comprehensive EMS may be sufficient to certify to the International Standardization Organization (ISO) 14000 standard or EPA's performance track recognition.

Arizona businesses with a certified pollution prevention plan may develop a voluntary and simple EMS through their current pollution prevention planning processes since much of what is needed may already be in place. Although some businesses hire consultants to assist in developing an EMS, many companies have developed and implemented very strong programs internally. The time and cost for developing an EMS will vary by company and by the vitality of their existing environmental programs.

Environmental management is the manner in which a business administers its environmental affairs. Some of the businesses do it in an unorganized fashion, many manage it in a more methodical way. A methodical, systematic, or structured approach to environmental management is called an EMS.

EMS is about management. It adopts the classic management cycle of planning – doing – checking – evaluating. A business can implement the EMS cycle by using a variety of available techniques or by following established guidance manuals. The most widely used guidance is the ISO-14001 standard.

To facilitate the development of an EMS among small and medium-sized businesses, EPA in cooperation with NSF International in 2001 published an EMS Implementation Guidance document. The document mirrors the ISO-14001 standards, however, it is not intended for use for ISO certification, nor is it intended to provide specific interpretation of the ISO standards. The EPA document can be found at www.epa.gov/OW-OWM.html/iso14001/wm046200.htm

Some states, such as North Carolina, Virginia, and Michigan provide web sites which are useful for those who are interested in implementing an EMS. Please refer to the following addresses:

www.p2pays.org/iso/tipstools.asp

www.deq.state.va.us/ems/iso14001.html

www.michigan.gov/deq/0,1607,7-135-3307_3666_4149-102117--,00.html

Over the past decade, increasing numbers of businesses and agencies have implemented an EMS. A survey by ISO reveals that the total number of certificates awarded worldwide at the end of 2003 was 66,070, of which 3,553 belong to U.S. businesses.

Many more organizations have implemented a voluntary EMS, similar to the ISO 14001 model without seeking registration. As the number keeps going up, it is becoming critical to examine whether the existence of an EMS represents evidence of superior environmental performance.

A study by the University of North Carolina at Chapel Hill, published in 2003, attempted to find out what effects the implementation of an EMS has on a facility's environmental performance, regulatory compliance, and economic performance. The study provides the following conclusions:

-The introduction of an EMS did result in improvements in environmental performance. The higher the motivations for adopting an EMS, the greater the improvements. Moreover, facilities that had already developed formal pollution prevention plans improved more than those that did not have plans.

-The effects of EMS introduction on regulatory compliance rates was inconclusive because of small sample size. However, compliance awareness was improved due to the adoption of EMS.

-The benefit-cost comparison did show favorable economic impact. Although three quarters of the facilities were not able to identify any quantitative monetary benefits from their EMS during the first 2-years of implementation, the remaining 24 percent, however, reported an average benefit of \$90,320. Of those, the highest was \$1,217,000, while the lowest was \$24,000.

The median reported cost for EMS adoption was approximately \$64,000.
The highest reported cost was \$273,000 and the lowest was \$3,000.

-Significant qualitative benefits include increased management efficiency, increased operational efficiency, reduced liability, and regulatory benefits.

The study has shown that an EMS is good for the business, the environment, and the community. As a powerful management tool, an EMS can transform a business into a more competitive enterprise. Since market competition will be greater in the future as more businesses go global, an EMS will be the trend of the future for companies exporting their products to the international community.

This trend has been initiated in some major businesses, such as motor vehicle manufacturers. The U.S. car makers have mandated that all of their first-tier suppliers implement a certified EMS. This initiative can have a ripple effect if the first-tier suppliers issue a similar requirement for their suppliers.

II. Requirements for A Successful EMS Program

The two most significant attributes to a successful EMS are management commitment and employee motivation. Management will not commit anything unless they are well informed and aware about the costs and benefits of implementing an EMS.

The first and the most crucial step in launching an EMS is to acquaint management with the EMS concept.

Ways by which facilities' upper management can become acquainted with EMS include, among others:

- Attend ADEQ's "EMS workshop". The workshops will give them a thorough understanding of the EMS.

- Attend an "EMS overview meeting" with ADEQ. Upon request, the meetings can be conducted at their facilities. This meeting will give upper management a conceptual understanding of an EMS and allow them to provide input on the implementation of an EMS program at their facilities from a strategic perspective.

Once management becomes acquainted with EMS's and realize the advantages of an EMS, they may make a commitment and provide ongoing leadership for the development and implementation of an EMS. Management commitment is truly critical.

The second step in launching an EMS is to obtain EMS commitment from management. It must be a written commitment.

The commitment indicates management support and provision of resources. A commitment stating that management is willing to commit time, people, and financial resources to the development of an EMS is a good start. The purpose of having a written statement and extensive posting of the commitment is to ensure that all employees are aware that upper management is serious about implementing an EMS.

It must be dated, signed by the management, and posted throughout the facility as well as explained to all employees. The content of the commitment reflects the company's philosophy in doing business, its values, and priorities.

A sample of management commitment might be described as in the following policy statement:

“Our company is committed to producing products and services with the least possible impact on the environment. We plan to do this by providing the time, personnel, and financial resources for the development and implementation of an Environmental Management System”

By documenting and signing this statement of management commitment, the facility has passed the first milestone. The facility is now geared up for action. It is ready for the next step.

The third step is the appointment of an EMS team by management. The team should be led by a team leader who will eventually assume the role of an EMS manager.

The appointment of the EMS team is formalized by management by signing an internal memorandum. The memo specifies the name of individuals, i.e., the team leader and the team members, who will spearhead and promote the effort to develop and implement the facility's EMS. Copies of the memo are widely communicated in the facility so that employees are aware of the progress of the EMS initiative.

The EMS team members include those experienced in a wide variety of functions, such as facility operations, equipment operators, maintenance, engineering, risk management, manufacturing, human resources, finance, and quality control. Other than work experience, each of the members should be a dedicated employee, have a genuine interest in the EMS, and be open to change and new ideas.

(Please note that for a small business having, for example, 6 employees, each of the employees can be assigned as an EMS team member).

Once established, the team will meet regularly. For the first team meeting, discuss the task of the team and what roles each team member will play. The task of the team is to develop and implement an EMS for the facility.

A comprehensive EMS is an EMS that follows the ISO-14001 standards. The ISO standards cover 17 elements. They are:

- 1 Environmental policy
- 2 Environmental aspects
- 3 Legal and other requirements
- 4 Objectives, targets, and programs
- 5 Structure and responsibility
- 6 Training, awareness and competence
- 7 Communication
- 8 EMS documentation
- 9 Document control
- 10 Operational control
- 11 Emergency preparedness and response
- 12 Monitoring and measurement
- 13 Evaluation of compliance
- 14 Nonconformance, and corrective and preventive action
- 15 Records
- 16 EMS audits
- 17 Management review

In the following example, the team agrees to adopt a simple EMS responsibilities matrix. Although the format is simplified, its scope is still reflective of those ISO-14001 requirements. It displays the roles of each team member in developing the facility's EMS. This chart ensures that every EMS team member knows their tasks and roles in the process.

No.	Area of Responsibility	Josh	Jill	John	Jean	Jim
1	EMS management	Lead				
2	Environmental policy	Lead	√	√	√	
3	Legal requirements, evaluating compliance	Lead	√	√	√	
4	EMS planning: A. Process flow charting B. Environmental aspects and impacts C. Objectives and targets	Lead	√	√	√	√
5	Operations	√	√	√	Lead	√

	A. Operational control B. Monitoring and measurement					
6	Record management	Lead	√	√	√	√
7	Employee training	√	Lead	√	√	√
8	Emergency preparedness and response	√	√	Lead	√	√
9	Internal and external communications	Lead	√	√	√	√
10	EMS audits Corrective and preventive action	Lead	√	√	√	√

Management commitment, formalized by a signed document and the formation of an EMS team signifies a proper start in launching an EMS. The other attribute to a successful EMS is employee motivation. And when management commitment is combined with employee motivation, the result will be a powerful EMS.

Employee motivation is correlated directly to awareness. Awareness can be reinforced through the establishment of effective internal communication and employee training. For an EMS to work, all employees must participate in the EMS development and implementation processes. Their participation and commitment is paramount to the program. The reason why management commitment to adopt EMS and the decision to form an EMS team are widely communicated in the facility is simply to raise employee awareness, strengthen their motivation and be committed to EMS.

Internal communication and employee training are one of the areas that will be addressed by the EMS team in the development of an EMS. In the above responsibility matrix, those are Tasks #7 and #9. These tasks will be included in Template Three of our EMS template series.

III. Developing an Environmental Policy

The environmental policy is a document containing a statement by a facility of its pledges and principles concerning environmental management. Committed management will not look at environmental management as a stand alone management function, but regard it as an integral part of the overall business undertaking. In other words, environmental management must go hand in hand with production management, personnel management, financial management, marketing management, etc.

The environmental policy is essential because it will serve as a guide for the facility's EMS. It articulates business mission and values, and provides a framework on which the facility will operate environmentally. The policy must be simple so that everybody in the facility can understand it. Because of its significance, management must be involved in the development of the policy. The policy must be signed by upper management.

The EMS team can assign a team member to write a draft policy, or to write the draft policy as a team. Ask employees for comments on the draft, and rewrite the draft as necessary based on employees' input. Once completed, present the draft to management for review, comment, and/or approval.

An EMS-based environmental policy must contain at least the following three commitments:

- 1. Promote pollution prevention**
- 2. Comply with relevant environmental laws and regulations**
- 3. Focus on continual improvement**

A sample of a simple EMS environmental policy may look like this:

“Our company is committed to producing products and services with the least possible impact on the environment. We plan to do this by implementing pollution prevention, complying with relevant environmental laws and regulations, and seeking ways to continually improve our business practices so that we minimize our impact on the environment”.

A facility, however, may want to develop a policy that is unique to its existence. The facility's unique attributes or specific intention can be added in the policy. Some are listed below as examples:

“We pledge to reduce our use of toxic substances and to minimize the generation of hazardous wastes whenever feasible.”

“We will prevent pollution at the source. When waste cannot be avoided, we are committed to recycling, treatment and disposal in ways that minimize undesirable effects on air, water and land.”

“We will communicate our commitment to environmental stewardship to our employees, vendors, customers, and surrounding communities - and solicit their inputs in meeting our environmental goals.”

“We will encourage and support employee participation in preventing pollution, and achieving compliance and continual improvement.”

“We will include environmental requirements in product planning and designing activities.”

“We will include environmental factors when making purchasing and operating decisions.”

“We will resolve environmental-related problems which may have been created by past operations or handling of materials.”

“We will train our employees to be environmentally responsible at work and at home.”

Many Arizona facilities have adopted the standard P2 policy. With some revisions, a model EMS policy for Arizona facilities can be developed. The model will include the requirements of EMS policy, i.e., pollution prevention, environmental compliance, and continual improvement. A suggested model is provided in Appendix C.

IV. The Next Step

A successful EMS must be supported by management. The completion of an EMS-based environmental policy document by the EMS team and the signing of the policy by upper management represents a major milestone achieved by the facility.

Because management support has been widely communicated to employees since the inception of the EMS, employees should be aware of the program at the time the policy is announced to them. The whole series of these events will certainly motivate the employees to participate in the program.

When management is committed to the EMS and employees are motivated to become involved in the program, the next step for the EMS team is to develop the EMS. This will be addressed in Module Two of this EMS Template.

APPENDICES

*Appendix A – EMS Form 1: Management Commitment***Management Commitment to Development of an EMS****XYZ Company**

Our company is committed to producing products and services with the least possible impact on the environment. We plan to do this by providing the time, personnel, and financial resources for the development and implementation of an Environmental Management System.

Signature:**Title:****Date:***Appendix B – EMS Form 2: Responsibilities Matrix*

Responsibilities Matrix

XYZ Company

The following individuals will lead the effort to develop and implement an EMS for our company. The roles of each individual is indicated in the following matrix.

No	Area of Responsibility	Name1	Name2	Name3	Name4	Name5
1	EMS Management					
2	Environmental Policy					
3	Legal requirements, Evaluating compliance					
4	EMS Planning: A. Process flow charting B. Environmental aspects and impacts C. Objectives and targets					
5	Operations A. Operational control B. Monitoring and measurement					
6	Record management					
7	Employee training					
8	Emergency preparedness and response					
9	Internal and external communications					
10	EMS audits corrective and preventive action					

Signature:

Date:

Appendix C – EMS Form 3: Environmental Policy

Environmental Policy

XYZ Company

Our management and employees are committed to protecting the health and safety of the public and our employees and to protecting the environment.

- We will prevent pollution at the source wherever and whenever possible
- We will comply with relevant environmental laws and regulations and implement programs and procedures to ensure environmental compliance.
- We are committed to continual improvement and will seek ways to continually improve the effectiveness of our environmental program and our business practices to accomplish this commitment.

To the best of our ability, we will:

- Use pollution prevention to reduce the toxicity and amount of toxic substances and hazardous wastes, and minimize undesirable effects on air, water, and land.
- Employ pollution prevention to conserve natural resources, especially energy and water
- Provide pollution prevention and compliance training to employees.
- Involve and support employee participation in pollution prevention planning and in meeting our environmental commitments.

Appendix D - Glossary

Environmental Management System (EMS): a formal set of procedures and policies that define how an organization will manage and reduce its impacts on the environment.

Plan-Do-Check-Act model: a cycle of activities that describes the content of an EMS.

Comprehensive EMS: an EMS that follows the International Standardization Organization (ISO) 14001 standards. The ISO-14001 standards cover 18 required EMS components:.

Launching an EMS: the three steps which are necessary to start an EMS, i.e. (1) to raise management awareness, (2) the appointment of an EMS Team by management, and (3) the signing of an Environmental Policy by management.

EMS Team: a team appointed by management consisting of dedicated employees experienced in their jobs, open to change and new ideas, and who have a genuine interest in the EMS.

Environmental Policy: a statement expressing a commitment to the implementation and maintenance of an EMS and improvement of overall environmental performance.

Pollution Prevention (P2): operational procedures, processes and improvements in housekeeping or management technique that reduce the potential or actual releases of pollutants to the overall environment including air, water, and land. P2 techniques include toxic use reduction; reduction at the source of a process by changing raw material, technology, product specification, and good operating procedure; and recycling of wastes through reuse or reclaim/recover valuable components from the waste.